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10/521,131	01/12/2005	Giuseppe Pasqualini	IT 020018	6805

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EXAMINER
MARTELLO, EDWARD

ART UNIT	PAPER NUMBER
2628	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS,
WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on _20 January 2009_.

2a) ☐ This action is FINAL.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) _1-5 and 8-12_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) _1-5 and 8-12_ is/are rejected.

7) ☒ Claim(s) _1 and 12_ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1.   A request for continued examination under 37 CFR 1.114, including the fee set

forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this

application is eligible for continued examination under 37 CFR 1.114, and the fee set

forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action

has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 20

January 2009 has been entered.

2.   Claims 6, 7 and 13-20 have been cancelled. Claims 1-5 and 8-12 are currently

amended.

Claim Objections

3.   Claim 1 is objected to because of the following informalities: In line 7 of the

amended claim, the word "an" should be deleted. Appropriate correction is required.

4.   Claim 12 is objected to because of the following informalities: In the first line on

page 5 of the amended claim submission, the word "an" should be deleted. Appropriate

correction is required.

5.   Claim12 is objected to because of the following informalities: Claim 12 is

identified as originally presented and this is incorrect. It was changed from a dependent

into an independent claim and should be identified as currently amended. Appropriate

correction is required.

6.   The Applicants' amendment has necessitated the new grounds of rejection that

follow.

Claim Rejections - 35 USC § 101

        35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of
> matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the
> conditions and requirements of this title.

7.   Claims 1-5 and 8-11 are rejected under 35 U.S.C. 101 as not falling within one of

the four statutory categories of invention.   Supreme Court precedent[1] and recent Federal

Circuit decisions[2] indicate that a statutory "process" under 35 U.S.C. 101 must (1) be tied

to another statutory category (such as a particular apparatus), or (2) transform underlying

subject matter (such as an article or material) to a different state or thing. While the

instant claim(s) recite a series of steps or acts to be performed, the claim(s) neither

transform underlying subject matter nor positively tie to another statutory category that

accomplishes the claimed method steps, and therefore do not qualify as a statutory

process.   For example, the non-linear processing of at least one set of luminance,

saturation, and hue parameter values of input picture signals so as to produce output

picture signals based on the hue parameter value recited in claim 1 do not inherently

require the disclosed particular machine, article of manufacture or composition of matter

and they can be performed manually. If claim 1 was a method adapted to be executed on

the apparatus described in figure 2 of the instant application, it would be tied to a

physical device which would be a valid salutatory category. Similar remarks apply to

claims 2-5 and 8-11 which are dependent upon claim 1.

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[1]   *Diamond v. Diehr*, 450 U.S. 175, 184 (1981); *Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978); *Gottschalk
v. Benson*, 409 U.S. 63, 70 (1972); *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1876).
[1]   *In re Bilski*, 88 USPQ2d 1385 (Fed. Cir. 2008).

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[1]   *Diamond v. Diehr*, 450 U.S. 175, 184 (1981); *Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978); *Gottschalk
v. Benson*, 409 U.S. 63, 70 (1972); *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1876).
[2]   *In re Bilski*, 88 USPQ2d 1385 (Fed. Cir. 2008).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1.   Determining the scope and contents of the prior art.
2.   Ascertaining the differences between the prior art and the claims at issue.
3.   Resolving the level of ordinary skill in the pertinent art.
4.   Considering objective evidence present in the application indicating
        obviousness or nonobviousness.

8.   Claims 1-5, 8 and 10-12 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Bachmann et al. (U.S. Patent 5,436,673, already of record, hereafter

'673) and in view of Udagawa et al. (U. S. Patent 4,731,662, already of record, hereafter

'662).

9.   Regarding claim 1(Currently Amended), Bachmann teaches a method of non-

linear processing ('673; figs. 1 and 3A-3D; col. 3, ln. 54-60; col. 5, ln. 26-31 – where the

curve changes slope – non-linear) of at least one set of luminance, saturation, and hue

parameter values ('673; fig. 1, inputs converted, as necessary, to hue, sat and Y -

luminance) of input picture signals ('673; fig. 1; col. 2, ln. 62-68, col. 3, ln. 1-6) so as to

produce output picture signals ('673; fig. 1; col. 2, ln. 62-68, col. 3, ln. 1-6) based on the

hue parameter value and ~~modified~~ an output luminance parameter value and an output

saturation parameter ~~values~~ value ('673; fig. 1), wherein the method comprises the steps

of: receiving an input picture signals ('673; fig. 1; col. 2, ln. 62-68, col. 3, ln. 1-6); determining input luminance, saturation and hue parameter values of said input picture signals ('673; fig. 1, elements 13, 14 and 15); but does not teach obtaining the output saturation parameter value by increasing the input saturation parameter value up to a maximum level; and determining said maximum level using the input hue value and the output luminance parameter value such that clipping of a color driving value does not take place. ~~non linear processing is responsive to the hue parameter values of the input picture signals.~~ Udagawa, working in the same field of endeavor, however, teaches obtaining the output saturation parameter value by increasing the input saturation parameter value up to a maximum; level ('662; col. 4, ln. 22-45); and determining said maximum level using the input hue value (and the output luminance parameter value such that clipping of a color driving value does not take place.

10.   In regard to claim 2 (Currently Amended), Bachmann and Udagawa teach the method of as claimed in claim 1 and Bachmann further teaches wherein the non-linear processing ~~includes~~ comprises the steps of: determining a power (any desired function; '673; col. 4, ln. 29-33) depending on the hue parameter values; and raising the input saturation parameter ~~values~~ value to the power (any desired function; '673; col. 4, ln. 29-33) γ_h (SAT*KORR.SAT, '673; fig. 1, functional block 17).

11.   Regarding claim 3 (Currently Amended), Bachmann and Udagawa teach the method ~~of~~ as claimed in claim 2, and further teach ~~including~~ wherein said method further comprises the step of: adapting the power (any desired function; '673; col. 4, ln. 29-33) but does not teach that it is based on histogram data derived from one or more of the input parameter values. However, Udagawa, working in the same field of endeavor,

teaches a method comprising the step of adapting the power (saturation compression;

'662, col.4, ln. 23-45) based on histogram data derived from the input parameter values

('662, col. 4, ln. 5) ('662; fig. 5; col.4, ln. 23-45) for the benefit of providing a method

that is able to handle the condition where the density range of color saturation values of

an input image signal is broader than the density range of a target output device so that

the compression compensation is controlled in a manner to avoid the loss of picture

detail because the histogram equalization allows the color saturation to be increased more

for picture areas showing low saturation density levels than for picture areas showing

high saturation density levels while preventing the overall corrected signal from

exceeding the saturation limit or clipping level of the output device. It would have been

obvious to one of ordinary skill in the art at the time the invention was made to have

combined the teachings of Bachmann and the histogram teachings of '662 to provide a

method to handle the condition where the density range of color saturation values of an

input image signal is broader than the density range of a target output device so that the

compression compensation is controlled in a manner to avoid the loss of picture detail

because the histogram equalization allows the color saturation to be increased more for

picture areas showing low saturation density levels than for picture areas showing high

saturation density levels while preventing the overall corrected signal from exceeding the

saturation limit or clipping level of the output device.

12.   In regard to claim 4 (Currently Amended), Bachmann and Udagawa teach the

method ~~of~~ as claimed in claim 1 and Bachmann further teaches wherein the non-linear

processing ~~includes~~ comprises the steps of: determining a power (any desired function;

'673; col. 4, ln. 29-33) depending on the hue parameter ~~values~~ value; and raising the

input luminance parameter ~~values~~ value to the power (any desired function; '673; col. 4, ln. 29-33) (Y*KORR.LUM, '673; fig. 1, functional block 18).

13.   Regarding claim 5 (Currently Amended), Bachmann and Udagawa teach the method ~~of~~ as claimed in claim 4 and further teach ~~including~~ wherein said method further comprises the step of: adapting the power (any desired function; '673; col. 4, ln. 29-33) but does not teach that it is based on histogram data derived from one or more of the input parameter values. However, Udagawa, working in the same field of endeavor, teaches a method comprising the step of adapting the power (luminance compression; '662, col.4, ln. 23-45) based on histogram data derived from the input parameter values ('662, col. 4, ln. 5) ('662; fig. 5; col.4, ln. 23-45) for the benefit of providing a method that is able to handle the condition where the density range of luminance values of an input image signal is broader than the density range of a target output device so that the compression compensation is controlled in a manner to avoid the loss of picture detail because the histogram equalization allows the luminance to be increased more for picture areas showing low luminance density levels than for picture areas showing high luminance density levels while preventing the overall corrected signal from exceeding the luminance saturation limit or clipping level of the output device. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have combined the teachings of Bachmann and the histogram teachings of '662 to provide a method to handle the condition where the density range of luminance values of an input image signal is broader than the density range of a target output device so that compression compensation is controlled in a manner to avoid the loss of picture detail because the histogram equalization allows the luminance to be increased more for picture

areas showing low luminance density levels than for picture areas showing high

luminance density levels while preventing the overall corrected signal from exceeding the

luminance saturation limit or clipping level of the output device.

14.   Claims 6-7 (Cancelled).

15.   In regard to claim 8 (Currently Amended), Bachmann and Udagawa teach the

method of as claimed in claim 6 1, and Bachmann further teaches wherein the maximum

saturation values depend level depends on the modified output luminance parameter

value ('673; fig. 7 and 8; output of functional block 44 applied to multiplier functional

block 48; '673; fig. 1; col 6, ln. 62-68, col. 7, ln. 1-12).

16.   In regard to claim 10 (Currently Amended), Bachmann and Udagawa teach the

method of as claimed in claim 3 and further teach wherein, for a predetermined hue

parameter value, the power (any desired function; '673; col. 4, ln. 29-33) is adapted on

the basis of a weighed average input saturation parameter value of the input picture

signals, representing pixels in a window of an image. ('662; fig. 5 & 6; col. 4, ln. 20-68)

(Note that Udagawa uses the symbol C for saturation, '662; col. 3, ln. 64-68).

17.   Regarding claim 11 (Currently Amended), Bachmann and Udagawa teach the

method of as claimed in claim 10 and further teach wherein, for a predetermined hue

parameter value, the power (any desired function; '673; col. 4, ln. 29-33) for a current

('662; fig. 5 & 6; col. 4, ln. 20-68) (Note that Udagawa uses the symbol C for saturation,

'662; col. 3, ln. 64-68) but does not teach and/or a previous window. It would have been

obvious to one of ordinary skill at the time of the invention to have made the design

choice of implementing the storing of histograms of previous frames in the memories

contained in either cited patent and making the decision to use the current histogram or

the previously stored values for the benefit of preventing or smoothing over abrupt scene changes in the input video stream.

18.   In regard to claim 12 (Original), Bachmann teaches an apparatus ~~comprising picture processing circuitry for carrying out the method as claimed in claim 1~~ for non-linear processing ('673; figs. 1 and 3A-3D; col. 3, ln. 54-60; col. 5, ln. 26-31 – where the curve changes slope – non-linear) of at least one set of luminance, saturation, and hue parameter values ('673; fig. 1, inputs converted, as necessary, to hue, sat and Y - luminance) of input picture signals ('673; fig. 1; col. 2, ln. 62-68, col. 3, ln. 1-6) so as to produce output picture signals based on the hue parameter value and an output luminance parameter value and an oputput saturation parameter value ('673; fig. 1; col. 2, ln. 62-68, col. 3, ln. 1-6), the apparatus comprising: means for receiving an input picture signals ('673; fig. 1); means for determining input luminance, saturation and hue parameter values of said input picture signals ('673; fig. 1, elements 13, 14 and 15); but does not teach means for obtaining the output saturation parameter value by increasing the input saturation parameter value up to a maximum level; and means for determining said maximum level using the input hue value and the output luminance parameter value such that clipping of a color driving value does not take place. Udagawa, working in the same field of endeavor, however, teaches obtaining the output saturation parameter value by increasing the input saturation parameter value up to a maximum level ('662; fig. 10B; col. 4, ln. 22-45); and determining said maximum level using the input hue value (and the output luminance parameter value such that clipping of a color driving value does not take place.

19.   Claims 13-20 (Cancelled).

20.   Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bachmann

et al. (U.S. Patent 5,436,673, already of record, hereafter '673), as applied to claims 1- 5,

8 and 10-12 above, and in view of and in view of Udagawa et al. (U. S. Patent 4,731,662,

already of record, hereafter '662), as applied to claims 1-5, 8 and 10-12, and further in

view of Yamada et al. (U. S. Patent 5,742,296, already of record, hereafter '296).

21.   Regarding claim 9 (Currently Amended), Bachmann and Udagawa teach the

method ~~of~~ as claimed in claim 6̶2, but do not teach wherein the modified output

saturation parameter value is substantially determined by the equation:

$S' = S_{max} (S/ S_{max})^{\gamma h},$

where S is the saturation parameter value, S_{max} is the maximum saturation value, and γ_h,

is the power. Yamada, working in the same field of endeavor, however, teaches a

method for the benefit of preventing over saturation of the S values in the corrected

image, wherein a saturation-related output parameter value S' (γ_0) that is substantially

determined by the equation: $S' = S_{max}*(S/ S_{max})^{\gamma h}$ $\{\gamma_0 - \gamma_1(1-(1- \gamma_p \backslash \gamma_t)**\gamma_t \gamma_i\}$ ('296; col.

6, ln. 63-67, col. 7, ln. 1-2) where all the gamma values (saturations) are normalized to

the value of 1 so that the form of this equation becomes the form of the instant

application. In addition, γ_t corresponds to S, γ_p corresponds to S_{max} and γ_1 is

approximately equal to S_{max} ('296; col. 6, ln. 25-45). It would have been obvious to one

of ordinary skill in the art at the time the invention was made to have combined the

previous teachings Bachmann and to include the teachings of '296 to provide an

additional method to handle the condition where the total range of color saturation values

of an input image signal is broader than the input range of a target output device thus

allowing the controlling of the saturation compensation in a manner that avoids the loss

of color saturation because the equalization allows the color saturation to be increased more for picture areas showing low saturation levels than for picture areas showing high saturation levels while preventing the overall corrected signal from exceeding the saturation limit or clipping level of the output device.

Response to Arguments

22.   Applicant's arguments with respect to claims 1-5 and 8-12 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edward Martello whose telephone number is (571) 270-1883. The examiner can normally be reached on M-F 7:30-5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Xiao Wu can be reached on (571) 272-7761. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/EM/

Examiner, Art Unit 2628

/XIAO M. WU/
Supervisory Patent Examiner, Art Unit 2628